Amendments

Please amend the above-identified application, as follows:

In the Title:

Replace the title of the application on pages 1 and 57 with the following:

A1 --METHOD, SYSTEM AND PROGRAM PRODUCTS FOR REDUCING DATA MOVEMENT WITHIN A COMPUTING ENVIRONMENT BY BYPASSING NON-FILE SYSTEM BUFFERS--

In the Claims:

Please replace claims 1, 16 & 31 as set forth below. All claims are reproduced below for the Examiner's convenience.

A2 1. (AMENDED) A method of reducing data movement within a computing environment, said method comprising:

transmitting data between a file system of a server of said computing environment and a transmission medium of said computing environment, said transmitting being responsive to a request for transmission received by the server; and

wherein said transmitting comprises reducing data movement in said server by bypassing non-file system buffers of said server in performing the transmission, said buffers being bypassed irrespective of the server having knowledge of the request prior to receipt thereof.

2. The method of claim 1, wherein said transmitting comprises sending data from a sender of said computing environment over said transmission medium to said file system to be written to one or more storage media coupled to said file system.

3. The method of claim 2, wherein said sending comprises sending said data over said transmission medium using one or more buffers associated with said sender, and wherein said method further comprises receiving said data by said file system, said receiving comprising swapping one or more buffers associated with said file system with said one or more buffers associated with said sender.

4. The method of claim 3, wherein said swapping avoids copying data from said one or more buffers associated with said sender to said one or more buffers associated with said file system.

5. The method of claim 3, further comprising obtaining said one or more buffers associated with said file system, prior to said receiving.

6. The method of claim 3, further comprising returning said one or more buffers associated with said file system to free storage, subsequent to said swapping.

7. The method of claim 3, further comprising translating data in said one or more buffers associated with said file system to a format compatible with said file system, said translating being performed within said one or more buffers associated with said file system.

8. The method of claim 7, further comprising determining that translating is to be performed, said determining comprising checking a translation indicator to determine if translation is to be performed.

9. The method of claim 1, wherein said transmitting comprises sending data from said file system over said transmission medium to a receiver of said data.

10. The method of claim 9, wherein said sending comprises using a routine identified by said receiver to send said data, wherein said routine is provided one or more pointers to said data to be sent to said receiver.

11. The method of claim 9, wherein said sending comprises providing to said receiver one or more pointers to said data.

12. A method of reducing data movement within a computing environment, said method comprising:

sending data from a sender of said computing environment to a file system of said computing environment, said sending comprising using one or more buffers associated with said sender; and

receiving by said file system said data, wherein said receiving comprises swapping one or more buffers associated with said file system with said one or more buffers associated with said sender.

13. The method of claim 12, wherein said swapping avoids copying data from said one or more buffers associated with said sender to said one or more buffers associated with said file system.

14. A method of translating data from one format to another format, said method comprising:

determining that data located in at least one buffer associated with a file system usable in writing data to one or more storage media coupled to said file system is to be translated from one format to another format; and

translating at least a portion of said data in said at least one buffer, said translating being performed within said at least one buffer associated with said file system without requiring copying of said at least portion of said data to one or more other buffers.

15. The method of claim 14, wherein said determining comprises checking a translation indicator to determine if translation is to be performed.

16. (AMENDED) A system of reducing data movement within a computing environment, said system comprising:

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means for transmitting data between a file system of a server of said computing environment and a transmission medium of said computing environment, said transmitting being responsive to a request for transmission received by the server; and

wherein said means for transmitting comprises means for reducing data movement in said server by bypassing non-file system buffers of said server in performing the transmission, said buffers being bypassed irrespective of the server having knowledge of the request prior to receipt thereof.

17. The system of claim 16, wherein said means for transmitting comprises means for sending data from a sender of said computing environment over said transmission medium to said file system to be written to one or more storage media coupled to said file system.

18. The method of claim 17, wherein said means for sending comprises means for sending said data over said transmission medium using one or more buffers associated with said sender, and wherein said system further comprises means for receiving said data by said file system, said means for receiving comprising means for swapping one or more buffers associated with said file system with said one or more buffers associated with said sender.

19. The system of claim 18, wherein said means for swapping avoids copying data from said one or more buffers associated with said sender to said one or more buffers associated with said file system.

20. The system of claim 18, further comprising means for obtaining said one or more buffers associated with said file system, prior to said receiving.

21. The system of claim 18, further comprising means for returning said one or more buffers associated with said file system to free storage, subsequent to said swapping.

22. The system of claim 18, further comprising means for translating data in said one or more buffers associated with said file system to a format compatible with said file system, said translating being performed within said one or more buffers associated with said file system.

23. The system of claim 22, further comprising means for determining that translating is to be performed, said means for determining comprising means for checking a translation indicator to determine if translation is to be performed.

24. The system of claim 16, wherein said means for transmitting comprises means for sending data from said file system over said transmission medium to a receiver of said data.

25. The system of claim 24, wherein said means for sending comprises means for using a routine identified by said receiver to send said data, wherein said routine is provided one or more pointers to said data to be sent to said receiver.

26. The system of claim 24, wherein said means for sending comprises means for providing to said receiver one or more pointers to said data.

27. A system of reducing data movement within a computing environment, said system comprising:

a sender of said computing environment adapted to send data to a file system of said computing environment, wherein the sending comprises using one or more buffers associated with said sender; and

said file system adapted to receive said data, wherein the receiving comprises swapping one or more buffers associated with said file system with said one or more buffers associated with said sender.

28. The system of claim 27, wherein the swapping avoids copying data from said one or more buffers associated with said sender to said one or more buffers associated with said file system.

29. A system of translating data from one format to another format, said system comprising:

means for determining that data located in at least one buffer associated with a file system usable in writing data to one or more storage media coupled to said file system is to be translated from one format to another format; and

means for translating at least a portion of said data in said at least one buffer, said translating being performed within said at least one buffer associated with said file system without requiring copying of said at least portion of said data to one or more other buffers.

30. The system of claim 29, wherein said means for determining comprises means for checking a translation indicator to determine if translation is to be performed.

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31. (AMENDED) At least one program storage device readable by a machine, tangibly embodying at least one program of instructions executable by the machine to perform a method of reducing data movement within a computing environment, said method comprising:

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transmitting data between a file system of a server of said computing environment and a transmission medium of said computing environment, said transmitting being responsive to a request for transmission received by the server; and

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wherein said transmitting comprises bypassing non-file system buffers of said server in performing the transmission, said buffers being bypassed irrespective of the server having knowledge of the request prior to receipt thereof.

32. The at least one program storage device of claim 31, wherein said transmitting comprises sending data from a sender of said computing environment over said transmission medium to said file system to be written to one or more storage media coupled to said file system.

33. The at least one program storage device of claim 32, wherein said sending comprises sending said data over said transmission medium using one or more buffers associated with said sender, and wherein said method further comprises receiving said data by said file system, said receiving comprising swapping one or more buffers associated with said file system with said one or more buffers associated with said sender.

34. The at least one program storage device of claim 33, wherein said swapping avoids copying data from said one or more buffers associated with said sender to said one or more buffers associated with said file system.

35. The at least one program storage device of claim 33, wherein said method further comprises obtaining said one or more buffers associated with said file system, prior to the receiving.

36. The at least one program storage device of claim 33, wherein said method further comprises returning said one or more buffers associated with said file system to free storage, subsequent to the swapping.

37. The at least one program storage device of claim 33, wherein said method further comprises translating data in said one or more buffers associated with said file system to a format compatible with said file system, said translating being performed within said one or more buffers associated with said file system.

38. The at least one program storage device of claim 37, wherein said method further comprises determining that translating is to be performed, said determining comprising checking a translation indicator to determine if translation is to be performed.

39. The at least one program storage device of claim 31, wherein said transmitting comprises sending data from said file system over said transmission medium to a receiver of said data.

40. The at least one program storage device of claim 39, wherein said sending comprises using a routine identified by said receiver to send said data, wherein said routine is provided one or more pointers to said data to be sent to said receiver.

41. The at least one program storage device of claim 39, wherein said sending comprises providing to said receiver one or more pointers to said data.

42. An article of manufacture, comprising:

at least one computer usable medium having computer readable program code means embodied therein for causing the reducing of data movement within a computing environment, the computer readable program code means in said article of manufacture comprising:

computer readable program code means for causing a computer to send data from a sender of said computing environment to a file system of said computing environment, said computer readable program code means for causing a computer to send comprising computer readable program code means for causing a computer to use one or more buffers associated with said sender; and

computer readable program code means for causing a computer to receive by said file system the data, wherein said computer readable program code means

for causing a computer to receive comprises computer readable program code means for causing a computer to swap one or more buffers associated with said file system with said one or more buffers associated with said sender.

43. The article of manufacture of claim 42, wherein said computer readable program code means for causing a computer to swap avoids copying data from said one or more buffers associated with said sender to said one or more buffers associated with said file system.

44. At least one program storage device readable by a machine, tangibly embodying at least one program of instructions executable by the machine to perform a method of translating data from one format to another format, said method comprising:

determining that data located in at least one buffer associated with a file system usable in writing data to one or more storage media coupled to said file system is to be translated from one format to another format; and

translating at least a portion of said data in said at least one buffer, said translating being performed within said at least one buffer associated with said file system without requiring copying of said at least portion of said data to one or more other buffers.

45. The at least one program storage device of claim 44, wherein said determining comprises checking a translation indicator to determine if translation is to be performed.